



# Diagnosing and managing **thyroid disorders**

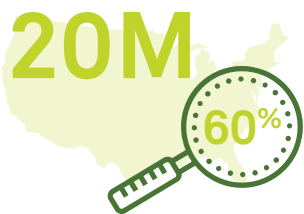
Accurate testing from Quest Diagnostics can help you diagnose, manage, and lower the risk of complications from thyroid disorders





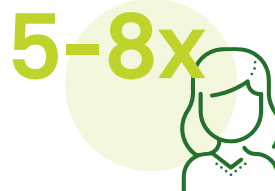
## Get the insight you need to diagnose and manage **thyroid disorders**

**20M**



An estimated **20 million** Americans have some form of thyroid disease and up to **60%** are unaware of their condition.<sup>1</sup>

**5-8x**



Women are **5 to 8 times** more likely than men to have thyroid problems, occurring most frequently in women over 60 years of age.<sup>1</sup>

Due to multiple causes and manifestations, thyroid disease can be challenging to diagnose and manage. Some of the most common symptoms of thyroid dysfunction can be easily overlooked or may initially be attributed to other causes.

**Thyroid testing from Quest can provide you with the insights you need to diagnose, treat, monitor, and prevent complications related to every type and etiology of thyroid disease, including Graves and Hashimoto diseases.**

# Know the signs and symptoms of **thyroid disorders**

Symptoms vary according to the type of dysfunction (hypothyroidism or hyperthyroidism) and are easily overlooked or attributed to other causes. Certain clinical symptoms and signs or abnormal lab tests are compatible with hypo- or hyperthyroidism.<sup>2</sup>

## Common symptoms of hypothyroidism:

- Fatigue
- Depression
- Thinning hair
- Dry skin
- Weight gain

## Common symptoms of hyperthyroidism:

- Increased heart rate
- Anxiety
- Insomnia
- Increased perspiration
- Weight loss

## Graves and Hashimoto diseases

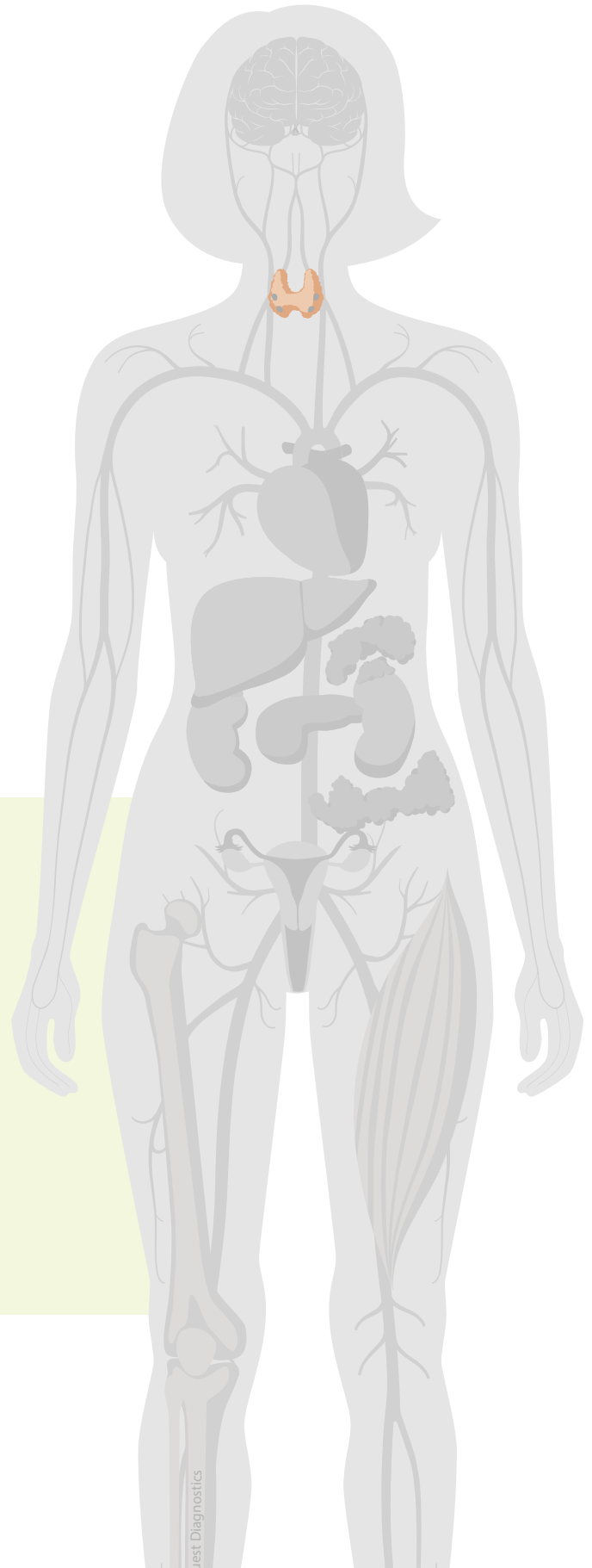
Graves disease and Hashimoto disease are the 2 most common autoimmune diseases affecting the thyroid gland.

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**Graves disease is the most common cause of hyperthyroidism in the US<sup>3</sup>**

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**Hashimoto disease is the most common cause of hypothyroidism in the US<sup>4</sup>**



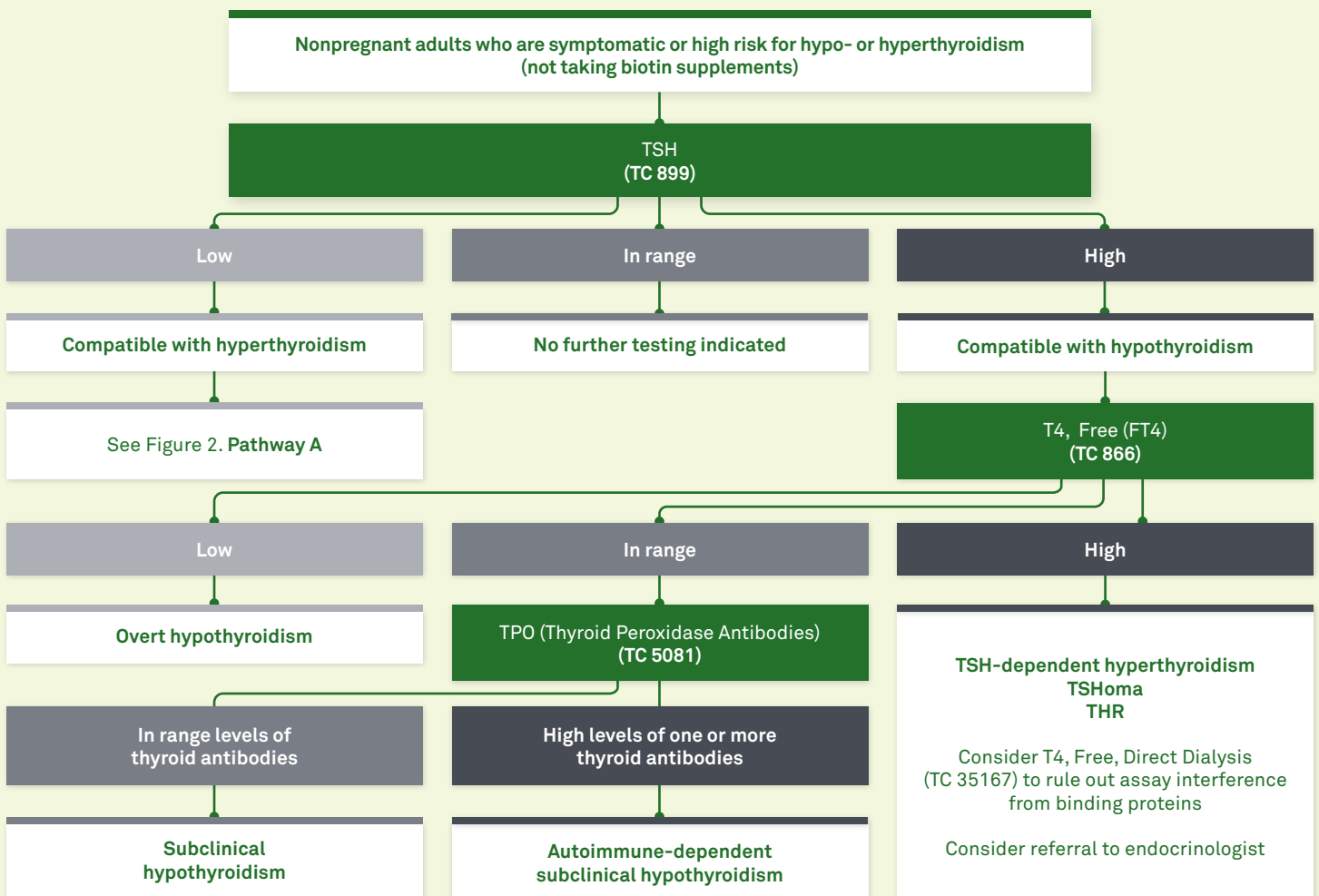
# Identifying and diagnosing thyroid disorders in patients

## Which patients should be tested for thyroid disorders?

- Any patients with a clinical presentation consistent with thyroid disorders as outlined in the list of symptoms
- High-risk individuals suitable for testing including those with<sup>5,6</sup>:
  - A strong family or personal history of thyroid disorders
  - Conditions such as anemia, cardiovascular disease, hypercalcemia, hyperprolactinemia, hyponatremia, osteoporosis, psychiatric disorders, pulmonary hypertension, or autoimmune disease
  - A history of treatments including neck irradiation, 131i treatment, thyroid surgery, and/or use of certain medications (amiodarone, lithium, interferon- $\alpha$ , interleukin-2, or tyrosine kinase inhibitors, and immune checkpoint inhibitors)

**Figure 1. Testing Algorithms for Thyroid Dysfunction in Nonpregnant Adults**

Testing algorithms have been identified to help determine the presence and type of thyroid conditions in nonpregnant adults. If thyroid dysfunction is suspected, ordering TSH with Reflex to Free T4 (TC 36127) or Thyroid Cascading Index (TC 15102) may facilitate a quicker differential diagnosis.

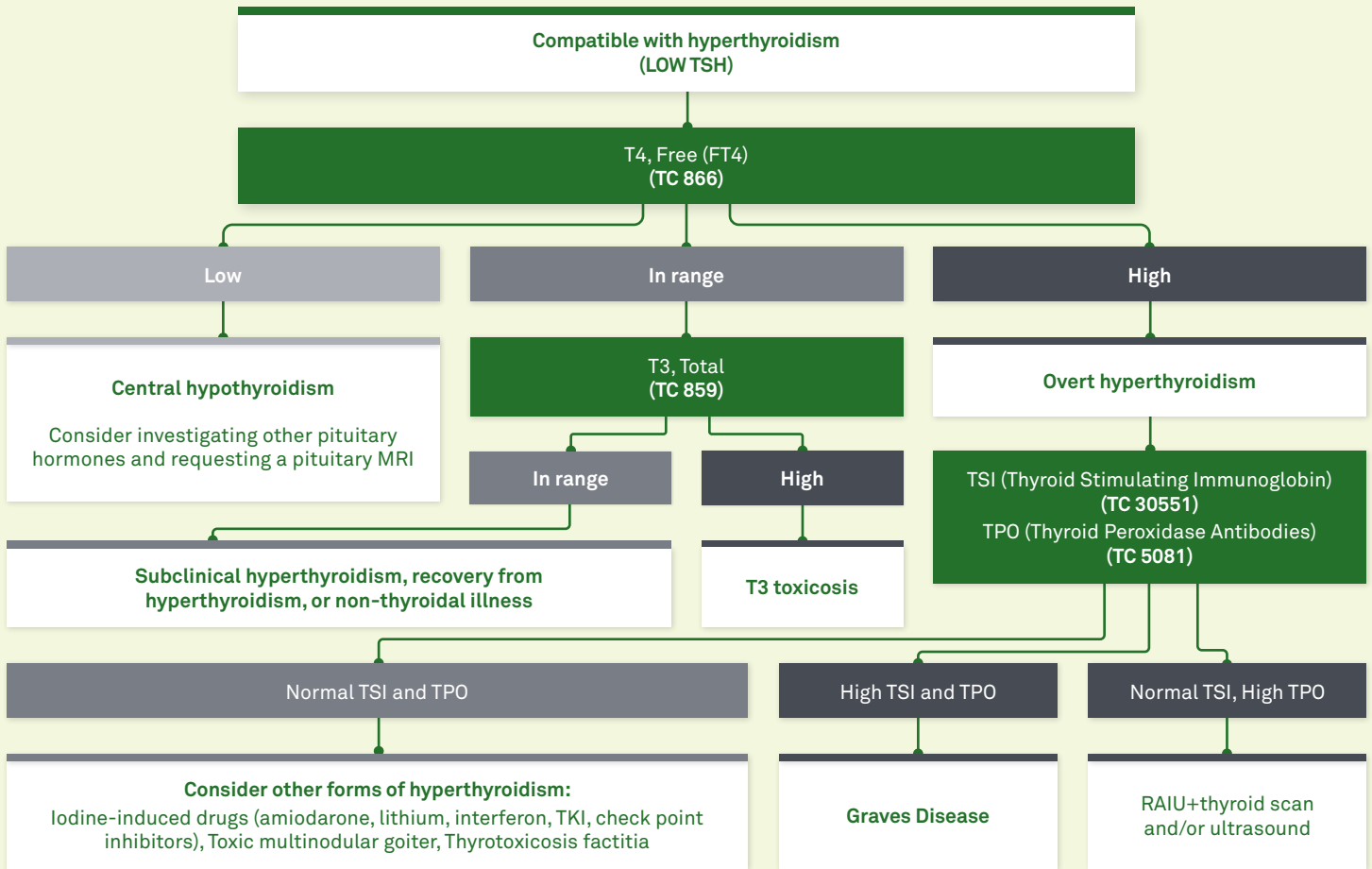


TC, test code; THR, thyroid hormone resistance; TPO, thyroid peroxidase antibodies; TSH, thyroid stimulating hormone; TSHoma, thyrotropinoma.

Always rule out biotin interference. If thyroid dysfunction is suspected, ordering TSH with Reflex to Free T4 (TC 36127) or Thyroid Cascading Reflex (TC 15102) may facilitate a quicker differential diagnosis.

See footnote under Pathway A for more information.

**Figure 2. Pathway A, Compatible with hyperthyroidism**



RAIU, radioactive iodine uptake; TC, test code; TKI, tyrosine kinase inhibitors; TPO, thyroid peroxidase antibodies; TSI, thyroid stimulating immunoglobulin. If hyperthyroidism is suspected, ordering TSH with Reflex to Free T4 (TC 36127) concurrently with total T3 (and antibody tests if thyroid is uniformly enlarged with proptosis) or Thyroid Cascading Reflex (TC 15102) may facilitate a quicker diagnosis.

## Laboratory tests

### Laboratory tests enable detection of both subclinical and overt disease.

In patients with **subclinical disease**, thyroid stimulating hormone (TSH) is either elevated (hypothyroidism) or suppressed (hyperthyroidism) in the presence of normal free thyroxine (T4). In these patients, routine treatment may not be necessary.<sup>7</sup>

In patients with **overt disease**, the decision to treat or closely monitor hypo- or hyperthyroidism is made based on clinician experience and risk for complications.

## Test availability

Quest Diagnostics offers tests and panels for the diagnosis of thyroid dysfunction and patient management.

**Table 1. Laboratory Tests for Diagnosing and Managing Thyroid Dysfunction**

Test name (Component test codes for panels)	Test code	Description
TSH	899	Diagnose hypo- and hyperthyroidism
TSH With HAMA Treatment	19537	Diagnose hypo- and hyperthyroidism in the presence of HAMA
TSH and Free T4	58984	Diagnose hypo- and hyperthyroidism
TSH Reflex to Free T4 <sup>c</sup>	36127	
T4 Free Direct Dialysis and T4 Total <sup>a</sup>	36725	
T4, Free	866	Diagnose hypo- and hyperthyroidism; monitor LT4 treatment response
T4, Free Direct Dialysis <sup>a</sup>	35167	
T4, Total	867	
T3, Free	34429	Diagnose and monitor treatment of hyperthyroidism
T3, Free, Tracer Dialysis <sup>a</sup>	36598	Diagnose hyperthyroidism and detect possible protein-binding anomalies
T3 Reverse, LC/MS/MS <sup>a</sup>	90963	Establish nonthyroidal illness as the cause for abnormal thyroid function tests, helps interpreting TFTs when the patient is taking amiodarone
T3, Total	859	Diagnose and monitor treatment of hyperthyroidism
T3, Uptake	861	Diagnose thyroid dysfunction by measuring percentage of T3 available to thyroid-binding globulin, indirectly estimates the amount of TBG in the blood (rarely used)
Thyroid Panel <sup>b</sup>	7020	Diagnose thyroid dysfunction using T3 uptake along with the total T4 to provide an estimate (free T4 index) of the free T4 level (rarely used), provides indirect evidence of TBG changes
Thyroid Cascading Reflex <sup>b,c</sup> Includes TSH and reflexes. If TSH is abnormal, reflexes to free T4. If TSH is elevated and free T4 is normal or low, reflexes to TPO antibody. If TSH is low and free T4 is normal or low, reflexes to free T3.	15102	Diagnose hypo- and hyperthyroidism, offered as a cascading reflex to expedite diagnosis
<b>Thyroid antibody</b>		
T3 (Triiodothyronine) Antibody <sup>a</sup>	36574	Evaluate discordant serum T3 (and TSH) levels
T4 (Thyroxine) Antibody <sup>a</sup>	36576	Evaluate discordant serum T4 and TSH levels
TBG (Thyroxine Binding Globulin)	870	Distinguish quantitative TBG derangements from thyroid dysfunction
Thyroglobulin Antibodies	267	Establish autoimmune thyroid disease as the cause for thyroid dysfunction, establish presence of residual thyroid adenocarcinoma (follicular or papillary) after surgery; HAMA treatment, if necessary, allows analysis in the presence of human anti-mouse antibodies
Thyroglobulin Panel <sup>a</sup>	30278	
Thyroglobulin Panel With HAMA Treatment <sup>b</sup>	19584	
Thyroid Peroxidase and Thyroglobulin Antibodies <sup>b</sup>	7260	Establish autoimmune hyperthyroidism, such as Graves disease or Hashitoxycosis
Thyroid Peroxidase Antibodies (TPO)	5081	
TRAb (TSH Receptor Binding Antibody)	38683	
TSH Antibody <sup>a</sup>	36577	Evaluate discordant serum TSH, free T4, and T3 levels
TSI (Thyroid Stimulating Immunoglobulin)	30551	Establish autoimmune thyroid disease (eg, Graves disease)
<b>Other useful tests for assessing or managing thyroid dysfunction</b>		
Alpha Subunit <sup>a</sup>	8658	Helps to identify patients with TSH-secreting pituitary adenoma
Cortisol Response to ACTH Stimulation, Serum <sup>a</sup>	38149	Assess adrenal insufficiency before starting LT4 therapy in patients with central hypothyroidism

ACTH, adrenocorticotropic hormone; HAMA, human anti-mouse antibody; LT4, levothyroxine; TBG, thyroxine binding globulin; TFT, thyroid function tests; TSH, thyroid-stimulating hormone.

<sup>a</sup> This test was developed, and its analytical performance characteristics have been determined by Quest Diagnostics. It has not been cleared or approved by the US Food and Drug Administration. This assay has been validated pursuant to the CLIA regulations and is used for clinical purposes.

<sup>b</sup> Panel components (test code) may be ordered separately.

<sup>c</sup> Reflex testing performed at an additional charge with an additional CPT code.



# Get the insights you need from the lab that knows endocrinology

**Count on actionable results to help you do your best for your patients.**

- Comprehensive thyroid tests across disease areas
- Reliable and accurate result reporting
- Endocrinology interpretation guides and algorithms
- Medical and scientific expertise from Quest Diagnostics

Guidelines are a simplification provided as a convenience and should not be used as a substitute for the healthcare provider's professional judgment. The source materials and other information should be consulted when appropriate. For more clinical information on thyroid testing, please visit the Quest Diagnostics Test Directory at <https://testdirectory.questdiagnostics.com>.



Contact your Quest Diagnostics sales representative for more information about thyroid testing.

To speak to an endocrinology specialist, call 1.866.MYQUEST (1.866.697.8378)



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